



ANALYTICAL SUMMARY REPORT

January 08, 2018

Solvay Chemicals

PO Box 1167

Green River, WY 82935-1167

Work Order: C17120696

Project Name: Submitted as Non-EPA/PWS 5600914P

Energy Laboratories, Inc. Casper WY received the following 1 sample for Solvay Chemicals on 12/28/2017 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C17120696-001	Entry Point	12/27/17 11:00	12/28/17	Drinking Water	Carbon, Total Organic Haloacetic Acid Liquid-Liquid Ext. (VOA) 552-Haloacetic Acids-(HAAs) 524-Purgeable Organics, Trihalomethanes

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:



CLIENT: Solvay Chemicals
Project: Submitted as Non-EPA/PWS 5600914P
Work Order: C17120696

Report Date: 01/08/18

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.



LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Solvay Chemicals
Project: Submitted as Non-EPA/PWS 5600914P
Lab ID: C17120696-001
Client Sample ID: Entry Point

Report Date: 01/08/18
Collection Date: 12/27/17 11:00
Date Received: 12/28/17
Matrix: Drinking Water

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
NON-METALS							
Organic Carbon, Total (TOC)	ND	mg/L		0.5		A5310 C	12/29/17 16:15 / dmb
VOLATILE ORGANIC COMPOUNDS							
Bromodichloromethane	ND	ug/L		0.50		E524.2	12/29/17 20:05 / dm
Bromoform	ND	ug/L		0.50		E524.2	12/29/17 20:05 / dm
Chlorodibromomethane	ND	ug/L		0.50		E524.2	12/29/17 20:05 / dm
Chloroform	ND	ug/L		0.50		E524.2	12/29/17 20:05 / dm
Trihalomethanes, Total	ND	ug/L		0.50	80	E524.2	12/29/17 20:05 / dm
Surr: 1,2-Dichloroethane-d4	99.0	%REC		70-130		E524.2	12/29/17 20:05 / dm
Surr: p-Bromofluorobenzene	111	%REC		70-130		E524.2	12/29/17 20:05 / dm
Surr: Toluene-d8	106	%REC		70-130		E524.2	12/29/17 20:05 / dm
HALOACETIC ACIDS							
Dibromoacetic acid	ND	ug/L		0.25		E552.2	01/02/18 21:00 / eli-b
Dichloroacetic acid	ND	ug/L		0.75		E552.2	01/02/18 21:00 / eli-b
Monobromoacetic acid	ND	ug/L		0.50		E552.2	01/02/18 21:00 / eli-b
Monochloroacetic acid	ND	ug/L		0.75		E552.2	01/02/18 21:00 / eli-b
Trichloroacetic acid	ND	ug/L		0.50		E552.2	01/02/18 21:00 / eli-b
Total Regulated Haloacetic Acids	ND	ug/L		0.25	60	E552.2	01/02/18 21:00 / eli-b
Bromochloroacetic acid	ND	ug/L		0.50		E552.2	01/02/18 21:00 / eli-b
Surr: 2,3-Dibromopropionic acid	82.0	%REC		70-130		E552.2	01/02/18 21:00 / eli-b

Report RL - Analyte reporting limit.
Definitions: QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.



QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Solvay Chemicals

Report Date: 01/03/18

Project: Submitted as Non-EPA/PWS 5600914P

Work Order: C17120696

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A5310 C										Analytical Run: TOC3-C_171229A
Lab ID: CCV-9806										12/29/17 13:45
Organic Carbon, Total (TOC)		5.04	mg/L	0.50	101	90	110			
Method: A5310 C										Batch: R230897
Lab ID: LCS-10002										12/29/17 13:01
Organic Carbon, Total (TOC)		4.89	mg/L	0.50	98	90	110			
Lab ID: MBLK										12/29/17 13:30
Organic Carbon, Total (TOC)		0.1	mg/L	0.08						
Lab ID: C17120689-002BMS										12/29/17 14:16
Organic Carbon, Total (TOC)		7.01	mg/L	0.50	101	85	115			
Lab ID: C17120689-002BMDS										12/29/17 14:32
Organic Carbon, Total (TOC)		7.03	mg/L	0.50	102	85	115	0.2	20	

Qualifiers:

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QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Solvay Chemicals

Report Date: 01/08/18

Project: Submitted as Non-EPA/PWS 5600914P

Work Order: C17120696

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E524.2								Analytical Run: R230899		
Lab ID: 29-Dec-17_CCV_3	8	Continuing Calibration Verification Standard							12/29/17 14:46	
Bromodichloromethane		5.04	ug/L	0.50	101	70	130			
Bromoform		4.24	ug/L	0.50	85	70	130			
Chlorodibromomethane		4.56	ug/L	0.50	91	70	130			
Chloroform		4.96	ug/L	0.50	99	70	130			
Trihalomethanes, Total		18.8	ug/L	0.50	94	70	130			
Surr: p-Bromofluorobenzene				0.50	102	70	130			
Surr: 1,2-Dichloroethane-d4				0.50	89	70	130			
Surr: Toluene-d8				0.50	109	70	130			
Method: E524.2								Batch: R230899		
Lab ID: 29-Dec-17_LCS_4	8	Laboratory Control Sample							Run: 5975VOC1_171229A	
Bromodichloromethane		5.12	ug/L	0.50	102	70	130		12/29/17 15:18	
Bromoform		5.16	ug/L	0.50	103	70	130			
Chlorodibromomethane		4.96	ug/L	0.50	99	70	130			
Chloroform		5.24	ug/L	0.50	105	70	130			
Trihalomethanes, Total		20.5	ug/L	0.50	102	70	130			
Surr: p-Bromofluorobenzene				0.50	114	70	130			
Surr: 1,2-Dichloroethane-d4				0.50	91	70	130			
Surr: Toluene-d8				0.50	106	70	130			
Lab ID: 29-Dec-17_MBLK_6	8	Method Blank							Run: 5975VOC1_171229A	
Bromodichloromethane		ND	ug/L	0.50					12/29/17 16:22	
Bromoform		ND	ug/L	0.50						
Chlorodibromomethane		ND	ug/L	0.50						
Chloroform		ND	ug/L	0.50						
Trihalomethanes, Total		ND	ug/L	0.50						
Surr: p-Bromofluorobenzene				0.50	104	70	130			
Surr: 1,2-Dichloroethane-d4				0.50	92	70	130			
Surr: Toluene-d8				0.50	106	70	130			

Qualifiers:

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QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Solvay Chemicals

Report Date: 01/08/18

Project: Submitted as Non-EPA/PWS 5600914P

Work Order: C17120696

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E552.2							Analytical Run: 117130		
Lab ID: CK5-117130	Continuing Calibration Verification Standard						01/02/18 21:18		
Dibromoacetic acid	3.71	ug/L	0.25	93	70	130			
Dichloroacetic acid	11.5	ug/L	0.75	96	70	130			
Monobromoacetic acid	7.91	ug/L	0.50	99	70	130			
Monochloroacetic acid	11.6	ug/L	0.75	97	70	130			
Trichloroacetic acid	3.42	ug/L	0.50	86	70	130			
Bromochloroacetic acid	7.37	ug/L	0.50	92	70	130			
Total Regulated Haloacetic Acids	38.1	ug/L	0.25	95	70	130			
Surr: 2,3-Dibromopropionic acid			1.2	100	70	130			
Method: E552.2							Batch: 117130		
Lab ID: CK3-117130	Continuing Calibration Verification Standard						Run: EECD.I_180102A		
Dibromoacetic acid	0.785	ug/L	0.25	79	70	130			01/02/18 18:02
Dichloroacetic acid	2.95	ug/L	0.75	98	70	130			
Monobromoacetic acid	2.02	ug/L	0.50	101	70	130			
Monochloroacetic acid	2.94	ug/L	0.75	98	70	130			
Trichloroacetic acid	0.817	ug/L	0.50	82	70	130			
Bromochloroacetic acid	1.58	ug/L	0.50	79	70	130			
Total Regulated Haloacetic Acids	9.51	ug/L	0.25	95	70	130			
Surr: 2,3-Dibromopropionic acid			1.2	80	70	130			
Lab ID: MB1-117130	Method Blank						Run: EECD.I_180102A		
Dibromoacetic acid	ND	ug/L	0.25						01/02/18 18:20
Dichloroacetic acid	ND	ug/L	0.75						
Monobromoacetic acid	ND	ug/L	0.50						
Monochloroacetic acid	ND	ug/L	0.75						
Trichloroacetic acid	ND	ug/L	0.50						
Bromochloroacetic acid	ND	ug/L	0.50						
Total Regulated Haloacetic Acids	ND	ug/L	0.25						
Surr: 2,3-Dibromopropionic acid			1.2	71	70	130			
Lab ID: LCS-117130	Laboratory Control Sample						Run: EECD.I_180102A		
Dibromoacetic acid	3.79	ug/L	0.25	95	70	130			01/02/18 19:14
Dichloroacetic acid	11.5	ug/L	0.75	96	70	130			
Monobromoacetic acid	7.85	ug/L	0.50	98	70	130			
Monochloroacetic acid	11.0	ug/L	0.75	92	70	130			
Trichloroacetic acid	3.40	ug/L	0.50	85	70	130			
Bromochloroacetic acid	7.33	ug/L	0.50	92	70	130			
Total Regulated Haloacetic Acids	37.5	ug/L	0.25	94	70	130			
Surr: 2,3-Dibromopropionic acid			1.2	77	70	130			
Lab ID: B17122105-001BMS	Sample Matrix Spike						Run: EECD.I_180102A		
Dibromoacetic acid	3.81	ug/L	0.25	95	70	130			01/02/18 20:07
Dichloroacetic acid	18.4	ug/L	0.75	102	70	130			

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QA/QC Summary Report

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Report Date: 01/08/18

Project: Submitted as Non-EPA/PWS 5600914P

Work Order: C17120696

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E552.2									Batch: 117130
Lab ID: B17122105-001BMS	Sample Matrix Spike								Run: EECD.I_180102A 01/02/18 20:07
Monobromoacetic acid	9.72	ug/L	0.50	122	70	130			
Monochloroacetic acid	13.1	ug/L	0.75	109	70	130			
Bromochloroacetic acid	9.58	ug/L	0.50	103	70	130			
Total Regulated Haloacetic Acids	55.2	ug/L	0.25	106	70	130			
Surr: 2,3-Dibromopropionic acid			1.2	74	70	130			
Lab ID: B17122106-001BDUP	Sample Duplicate								Run: EECD.I_180102A 01/02/18 20:42
Dibromoacetic acid	2.37	ug/L	0.25				5.7	40	
Dichloroacetic acid	3.46	ug/L	0.75				1.4	40	
Monobromoacetic acid	ND	ug/L	0.50					40	
Monochloroacetic acid	ND	ug/L	0.75					40	
Trichloroacetic acid	1.92	ug/L	0.50				2.1	40	
Bromochloroacetic acid	3.38	ug/L	0.50				1.2	40	
Total Regulated Haloacetic Acids	7.75	ug/L	0.25				1.9	40	
Surr: 2,3-Dibromopropionic acid			1.2	73	70	130			
Lab ID: B17122105-001BMS	Sample Matrix Spike								Run: EECD.I_180102A 01/02/18 22:29
Trichloroacetic acid	10.1	ug/L	2.5	89	70	130			

Qualifiers:

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Work Order Receipt Checklist

Solvay Chemicals

C17120696

Login completed by: Dorian Quis

Date Received: 12/28/2017

Reviewed by: Kasey Vidick

Received by: dcq

Reviewed Date: 12/29/2017

Carrier name: NDA

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	0.7°C On Ice		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

None



Date 01/27/2017

Page 1 /3

ENERGY LABORATORIES INC
P.O. Box 247
CASPER WY 82602-0247

Purchase order

Our reference
4512818043-4291-KH
Please mention with any correspondence and on invoice
Contact person/telephone/email
Kami Hopkinson 307-872-6671
KAMI.HOPKINSON@SOLVAY.COM
Fax 307-872-5863

Your tel 307-235-0515
Your fax 307-234-1639 (US)
Your vendor number 2115204

Please deliver to:
SOLVAY SODA ASH JOINT VENTURE
O.DEAN;;
400 COUNTY ROAD 85
GREEN RIVER WY 82935

Valid to : 05/01/2017
Delivery date : 02/01/2017

Please email or send your invoice to :
Email: HN-Shared.Services-SIT@solvay.com
SOLVAY SODA ASH JOINT VENTURE
CN 5208, Princeton
NJ 08540, United States

Vendor Invoice Inquiry:

Internet:
<http://www.solvay.com/en/about-solvay/procurement/invoicing/index.html>
E-Mail: ptp-accounts.payable@solvay.com
Phone: 877-463-7645 Supplier Hotline

WYOMING DIRECT PAY PERMIT 27-0-00010

Incoterms : FOB SHIPPING POINT
Payment terms : 30 D end of month from invoice date the 5th



ENERGY LABORATORIES INC
P.O. Box 247
CASPER WY 82602-0247

Your tel 307-235-0515
Your fax 307-234-1639 (US)
Your vendor number 2115204

Purchase order

Our reference
4513028810-4291-KH
Please mention with any correspondence and on invoice
Contact person/telephone/email
HOPKINSON K 307-872-6671
KAMI.HOPKINSON@SOLVAY.COM
Fax 307-872-5863

Please deliver to:
SOLVAY SODA ASH JOINT VENTURE
400 COUNTY ROAD 85
GREEN RIVER WY 82935

Valid to : 02/28/2018
Delivery date : 12/08/2017

Please email or send your invoice to :
Email: accountspayable.na-us@solvay.com
SOLVAY SODA ASH JOINT VENTURE

Vendor Invoice Inquiry:
Internet:
<http://www.solvay.com/en/about-solvay/procurement/invoicing/index.html>
E-Mail: ptp-accounts.payable@solvay.com
Phone: 877-463-7645 Supplier Hotline

WYOMING DIRECT PAY PERMIT 27-0-00010

Incoterms : FOB SHIPPING POINT
Payment terms : 60 D from invoice date

The Purchase Order Number indicated in the upper right hand corner of this document must be included on all shipments, invoices, and other documentation. Your packing list, shipping papers, or bill of lading must reference our Purchase Order Number and our Line Number.
Any material received without this information is subject to refusal at our dock. Your invoice must reference our Purchase Order number and our line item number. In the event they do not, they will be returned for correction and resubmittal and processed for payment based on the resubmitted date.
A copy of the freight bill is required if freight is charged on the invoice



Trust our People. Trust our Data.
www.energylab.com

Billings, MT 800.735.4489 • Casper, WY 888.235.0515
Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

BOTTLE ORDER 51396



SHIPPED TO: Solvay Chemicals

Contact: Ouisha Dean
400 County Rd 85
Green River WY 82935
Phone: (307) 872-6571
Project:

Order Created by: Kathy Hamre
Shipped From: Casper, WY
Ship Date: 2/10/2017
VIA: Ground

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp
40 mL Amber Glass VOA	3	A5310 C	Carbon, Total Organic		<input type="checkbox"/> H3PO4		2

☒ HNO3 - Nitric Acid ☐ H2SO4 - Sulfuric Acid ☒ NaOH - Sodium Hydroxide **We strongly suggest that the samples are shipped the same day as they are collected.**

☒ ZnAc - Zinc Acetate ☒ HCl - Hydrochloric Acid ☐ H3PO4 - Phosphoric Acid

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.